

## **E) REMARKS**

This Response is filed in response to the Final Office Action dated April 5, 2006.

Upon entry of this response, claims 1-12 and 14-21 will be pending in this Application.

In the outstanding Office Action, the Examiner objected to the drawings; objected to the specification for various informalities; objected to claims 3, 4, 7 and 8 for various informalities; rejected claims 6 and 9 under 35 U.S.C. § 112, second paragraph; as being indefinite; rejected claims 1-5, 7, 8 and 13-21 under 35 U.S.C. § 102(b) as being as being anticipated by Gray et al. (U.S. Patent No. 4,879,140), hereinafter "Gray"; rejected claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Gray; rejected claims 1 and 9-12 under 35 U.S.C. § 103(a) as being unpatentable over Andes et al. (U.S. Patent No. 6,284,032), hereinafter "Andes", in view of Gray.

Support for the claim amendments are found in at least paragraph [0025] and Figure 3 of the application as filed.

### **Rejection under 35 U.S.C. 102**

The Examiner rejected claims 1-5, 7, 8 and 13-21 under 35 U.S.C. § 102(b) as being as being anticipated by Gray.

Specifically, the Examiner stated that

13. Regarding claims 1, 3 and 4, Gray et al. teaches a method of depositing a  $\text{SiO}_2/\text{TiO}_2$  multilayer on the inside wall of a glass tube (column 4, lines 6 ~ 8). According to claims 3 and 4,  $\text{SiO}_2$  is a material having a low index of radiative reflectance and  $\text{TiO}_2$  is a material having a high index of radiative reflectance. Gray et al. also teaches that elevating the temperature of the film/tube combination increases tensile forces (column 6, lines 59 ~ 61). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 ~ 37). The flakes of film material can then be swept through with nitrogen and collected by a downstream filter (column 4, lines 16 ~ 17).

14. Regarding claim 2, Gray et al. teaches that thermal stress occurs as the film temperature is changed from the deposition temperature and is the result of the usually different thermal expansion coefficients of the multilayered film materials and the substrate (column 6, lines 29 – 33). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate.

15. Regarding claim 5, a tray is defined to be a shallow flat receptacle with a raised edge or rim. The specification states that a tray can be a single piece of construction, such as a spiral or any other geometric profile (paragraph 25, lines 6 – 7). From the definition of the specification, a tray can have a surface that may not necessarily be flat. For example, a spiral is a curve on a plane that winds around a fixed axis. Gray et al. teaches a glass tube that is a single piece of construction and has a tubular profile. In Fig. 1, the end collars (2) form a raised edge at the end of the glass tube. In essence, this glass tube is a tray that is curved into a tube. The predetermined arrangement of the glass tube can be horizontal, vertical, or somewhere in between.

16. Regarding claims 7 and 8, Gray et al. teaches that the pigment flakes are produced via plasma chemical vapor deposition techniques (column 1, lines 7 – 12).

17. Regarding claim 13, Gray et al. teaches that the flakes can have a nominal thickness ranging from 50 angstroms to 300 microns.

18. Regarding claim 14, Gray et al. discloses in a release layer that is provided to promote the removal of the pigmented film as flakes (column 7, lines 2- 3). In Fig. 2, the release layer (14) is deposited onto the substrate (13) (column 7, lines 4- 5). Gray et al.

also teaches a method of depositing a  $\text{SiO}_2/\text{TiO}_2$  multilayer on the inside wall of a glass tube (column 4, lines 6 – 8). According to claims 3 and 4,  $\text{SiO}_2$  is a material having a low index of radiative reflectance and  $\text{TiO}_2$  is a material having a high index of radiative reflectance. In addition, Gray et al. teaches that elevating the temperature of the finitube combination increases tensile forces (column 6, lines 59 – 61). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 – 37). The flakes of film material can be swept through with nitrogen and collected by a downstream filter (column 4, lines 16 – 17).

19. Regarding claims 15 – 18, Gray et al. discloses  $\text{SiO}_2/\text{TiO}_2$  multilayers having alternating layers of high and low index of radiative reflectance material. As this compound is the same as that disclosed by applicants to have the claimed spectral reflectance profile and said profile is a result of the material properties of the composition, Gray et al.'s  $\text{SiO}_2/\text{TiO}_2$  multilayer inherently possesses the properties in claims 15 – 21.

20. In addition, the inherency of the features of claims 15 and 16 is evidence in paragraph 3, lines 6 – 15, where it is stated "these coatings may reflect radiative energy that would act to further raise the surface temperature of the component, while simultaneously permitting radiative energy generated by the component itself to pass through the coating to further reduce the temperature of the component".

Applicants respectfully traverse the rejection of claims 1-5, 7, 8 and 13-21 under 35 U.S.C. § 102(b).

The examiner is reminded that "[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)." See Manual of Patent Examining Procedure, 8<sup>th</sup> Edition (MPEP), Section 2131.

In addition, “[t]he identical invention must be shown in as complete detail as is contained in the ... claim.’ *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).” *See* MPEP, Section 2131.

Gray, as understood, is directed to a method for making pigment plates by coating the inside wall of a glass tube passed through a microwave using plasma chemical vapor deposition techniques.

In contrast, claim 1 recites a method for producing a coating for applying to parts used in combustive gas atmospheres, the process comprising: providing a chamber having an inside surface, the chamber supporting at least one stationary tray, each tray having at least two surfaces; applying at least one layer of a first material having a high index of radiative reflectance to the at least two surfaces, not including the inside surface; applying at least one layer of a second material having a low index of radiative reflectance over the at least one layer of the first material such that the combined layers of first and second material meet a predetermined spectral reflectance profile; exposing the combined layers to a heating cycle of predetermined temperature and duration to release the combined layers from the at least two surfaces; and collecting the combined layers. (emphasis added)

Also in contrast, claim 14 recites a method for producing a coating for applying to a component surface, the process comprising: providing a chamber having an inside surface, the chamber supporting at least one tray, each tray having at least two surfaces; applying a release layer to the at least two surfaces, not including the inside surface; applying at least one layer of a first material having a high index of radiative reflectance over the release layer; applying at least one layer of a second material having a low index of radiative reflectance over the at least one layer of the first material such that the combined layers of first and second material meet a predetermined spectral reflectance profile; exposing the combined layers to a heating cycle of predetermined temperature and duration to remove the release layer to release the combined layers from the at least one surface; and collecting the combined layers. (emphasis added)

Several of the features recited by Applicant in independent claims 1 and 14, as amended, are not taught or suggested by Gray. First, Gray does not teach or suggest providing a chamber having an inside surface, the chamber supporting at least one tray, each tray having at least two

surfaces, and applying at least one layer of a first material having a high index of radiative reflectance to the at least two surfaces, not including the inside surface, as recited by Applicant in independent claim 1. Also Gray does not teach or suggest providing a chamber having an inside surface, the chamber supporting at least one tray, each tray having at least two surfaces, and applying a release layer to the at least two surfaces, not including the inside surface, as recited by Applicant in independent claim 14. Gray teaches depositing a film to the inside wall of a glass tube, which is a single surface. The claimed invention recites not only recites applying a layer to at least two surfaces, but the at least two surfaces to not include the inside wall of the vessel, in contrast to Gray. Thus, since Gray does not teach or suggest all of the limitations recited in independent claims 1 and 14, Applicant respectfully submits that Gray does not anticipate Applicant's invention as recited in independent claims 1 and 14.

Therefore, for the reasons given above, independent claims 1 and 14 are believed to be distinguishable from Gray and therefore are not anticipated nor rendered obvious by Gray.

Dependent claims 2-5, 7, 8, 13 and 15-21 are believed to be allowable as depending from what are believed to be allowable independent claims 1 and 14 for the reasons given above. In addition, claims 2-5, 7, 8, 13 and 15-21 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 2-5, 7, 8, 13 and 15-21 are not anticipated nor rendered obvious by Gray and are therefore allowable.

### **Rejection under 35 U.S.C. 103**

#### **A. Claim 6**

The Examiner rejected claim under 35 U.S.C. § 103(a) as being unpatentable over Gray. Specifically, the Examiner stated that

25. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gray et al. Gray et al. discloses a tray with a geometric profile of a tube, as noted above, but does not teach a plurality of trays comprising of a total surface area of at least 100,000 square inches. One skilled in the art would not use only one glass tube in production. Rather, multiple glass tubes would be used in order to produce the invention in mass quantities and in a cost effective manner. It would then be obvious to one skilled in the art at the time of invention to use multiple glass tubes that can have a surface area of more than 100,000 square inches. One would be motivated to do so with the expectation of higher production rates and lower operating costs.

Applicants respectfully traverse the rejection of claim 6 under 35 U.S.C. § 103(a).

The following principle of law applies to all Section 103 rejections. MPEP 2143.03 provides “To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).” [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

The above discussion of Gray is equally applicable here.

Dependent claim 6 is believed to be allowable as depending from what is believed to be allowable independent claim 1 for the reasons given above. In addition, claim 6 recites further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claim 6 is neither anticipated nor rendered obvious by Gray and is therefore allowable.

#### **B. Claims 1 and 9-12**

The Examiner rejected claims 1 and 9-12 under 35 U.S.C. § 103(a) as being unpatentable over Andes in view of Gray.

Specifically, the Examiner stated that

27. Regarding claim 1, Andes et al. teaches a multilayer interference pigment with alternating layers of metal oxides of low and high refractive index, but does not teach a heating cycle to release the combined layers from the surface and later collecting the combined layers (abstract). Gray et al., however, teaches that elevating the temperature of the film/tube combination increases tensile forces (column 6, lines 58 -- 61). If the combination of intrinsic and thermal stresses in the film is tensile and greater than the adhesive force binding the film to the substrate, the film will crack into plates and flake away from the substrate (column 6, lines 33 -- 37). The flakes of film material can be swept through with nitrogen and collected by a downstream filter. It would then be obvious to one skilled in the art at the time of invention to heat the film and substrate

to release the combined layers and later collecting the layers. One would be motivated to do so in order to apply the layers as a coating onto other parts used in high combusive gas atmospheres.

28. Regarding claim 9, Andes et al. teaches platelike titanium dioxide as the substrate. The substrate in this case is the surface. Thus, a titanium dioxide surface is comprised of a high temperature metal.

29. Regarding claim 10, Andes et al. teaches platelike titanium dioxide as the substrate. The substrate in this case is the surface. According to [www.Wikipedia.com](http://www.Wikipedia.com), salts can be clear and transparent (sodium chloride), opaque (titanium dioxide), and even metallic and lustrous (iron disulfide). Thus, titanium dioxide is a form of opaque salt, and a titanium dioxide surface is comprised of a salt.

30. Regarding claims 11 and 12, Andes et al. teaches a substrate formed from flakes of aluminum or gold (column 1, lines 27 -- 28).

Applicants respectfully traverse the rejection of claims 1 and 9-12 under 35 U.S.C. § 103(a).

The above discussion of Gray is equally applicable here.

Andes, as understood, is directed to a process for manufacturing pigments involving a continuous belt onto which an aqueous solution of thermally hydrolysable titanium is applied to

one side of the belt (Figure 1) and subjected to various processing stations to remove the applied layer from the one side of the belt.

In contrast, independent claim 1 recites a method for producing a coating for applying to parts used in combustive gas atmospheres, the process comprising: providing a chamber having an inside surface, the chamber supporting at least one stationary tray, each tray having at least two surfaces; applying at least one layer of a first material having a high index of radiative reflectance to the at least two surfaces, not including the inside surface; applying at least one layer of a second material having a low index of radiative reflectance over the at least one layer of the first material such that the combined layers of first and second material meet a predetermined spectral reflectance profile; exposing the combined layers to a heating cycle of predetermined temperature and duration to release the combined layers from the at least two surfaces; and collecting the combined layers. (emphasis added)

Several of the features recited by Applicant in independent claim 1, as amended, are not taught or suggested by Andes. Andes does not teach or suggest a stationary tray, each tray having at least two surfaces and applying at least one layer of a first material to the at least two surfaces as recited by Applicant in independent claim 1. Thus, since Andes and/or Gray do not teach or suggest all of the limitations recited in independent claims 1 and 14, Applicant respectfully submits that Andes and/or Gray do not anticipate Applicant's invention as recited in independent claims 1 and 14.

Applicant submits that dependent claims 9-12 are distinguishable from Andes and/or Gray for at least the following reasons. To begin, dependent claims 9-12 are believed to be distinguishable from Andes and/or Gray as depending from what is believed to be allowable independent claim 1 as discussed above. In addition, claims 9-12 recite further limitations that distinguish over the applied art. In conclusion, it is respectfully submitted that claims 9-12 are neither anticipated nor rendered obvious by Gray and are therefore allowable.

#### **Objection to the Drawings**

The Examiner objected to the drawings, citing MPEP §608.02(g). Specifically, the Examiner stated that Figure 1 should be contain a legend such as --Prior Art--.



In response thereto, Figure 1 has been amended, as shown in the enclosed replacement drawing sheet. It is submitted that no new matter has been added by the amendments to Figure 1.

### **Objection to the Specification**

The Examiner objected to the specification due to various informalities.

In response, Applicant has corrected the specification as indicated by the Examiner, and has canceled claim 13. It is submitted that no new matter has been added by the amendments to the specification.

### **Objection to the Claims**

The Examiner objected to claims 3, 4, 7 and 8 for various informalities.

In response, Applicant has amended the claims in a manner identified by the Examiner, which is believed to overcome the objection. It is submitted that no new matter has been added by the amendments to the claims.

### **Rejection under 35 U.S.C. 112**

The Examiner rejected claims 6 and 9 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter applicant regards as the invention.

Applicant respectfully traverses the rejection of claims 6 and 9 under 35 U.S.C. 112, second paragraph.

The Examiner stated that in claim 6 lacks antecedent basis for "the plurality of trays", as claim 6 depends from claim 1, which lacks this limitation.

In response, Applicant has amended claim 6 in a manner that is believed to overcome the Examiner's rejection.

The Examiner states

10. The term "high temperature" in claim 9 is a relative term which renders the claim indefinite. The term "high temperature" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary

skill in the art would not be reasonably apprised of the scope of the invention. The specification notes that high temperature metals are metals having a high melting point, such as stainless steel. It is unclear as to what "high temperature" would be required for a metal to be considered as having a high melting point.

In response, Applicant cites paragraph [0003] of the present invention which states that "coating systems may be used in high temperature environments where part surface temperatures reach about 2,000°F or higher." This clarifying disclosure is added to existing paragraph [0027] to clarify that "certain stainless steels or other high temperature metals, that is, metals having a high melting point which are usable in high temperature environments of 2000°F or higher as previously discussed." Since the amended paragraph [0027] is taken from the specification as originally filed, no new matter is added.

Therefore, in view of the above, Applicant submits that claims 6 and 9 are not indefinite and complies with the provisions of 35 U.S.C. 112, second paragraph, and therefore is allowable.

### **CONCLUSION**

Applicants request the entry of the present amendment and the withdrawal of the rejection of claims 1-12 and 13-21. Based on the amendments to the claims, Applicants further request allowance of claims 1-12 and 13-21, and issuance of the application as amended. A timely and favorable action is earnestly solicited.

The Commissioner is hereby authorized to charge any additional fees and credit any overpayments to Deposit Account No. 50-1059.

Respectfully submitted,  
**McNEES, WALLACE & NURICK**

By     /K. Scott O'Brian/  
       **K. Scott O'Brian**  
       Reg. No. 42,946  
       100 Pine Street, P.O. Box 1166  
       Harrisburg, PA 17108-1166  
       Tel: (717) 237-5492  
       Fax: (717) 237-5300

Dated: June 26, 2006